Report Date: 30 Jun 2014

Summary Report for Individual Task
551-88L-2057
Maintain a Generator
Status: Approved

Distribution Restriction: Approved for public release; distribution is unlimited.

Destruction Notice: None

Foreign Disclosure: FD5 - This product/publication has been reviewed by the product developers in coordination with the [installation/activity name] foreign disclosure authority. This product is releasable to students from all requesting foreign countries without restrictions.

Condition: Given an operational generator aboard a vessel, at sea, at anchor or moored alongside a pier, day or night, under all sea and weather conditions, while wearing appropriate PPE, (i.e. hearing protection, Nitrile gloves, eye protection, etc.), lock out tag out kit and a marine rail tool box.

Standard: The Soldier correctly maintains an generator motor aboard an Army vessel, IAW the appropriate Technical Manual and local SOPs, without injury to self or others and without damage to equipment. The generator was fully mission capable at task completion.

Special Condition: None

Safety Risk: High

MOPP 4:

Task Statements

Cue: None

DANGER

None

WARNING

None

CAUTION

None

Remarks: None

Notes: None

Performance Steps

1. Demonstrate basic knowledge of generator maintenance.

a. Alternating current brushless generators.

(1) Maintain generator windings.

(a) The fan can disturb high bilge water and pass particulate of oil over the windings.

(b) Ensure that low bilge levels are maintained and the diesel air box ventilation exhausts away from the fan's airflow.

(c) This will prevent the winding insulation from becoming damaged.

(2) Maintain cleanliness of stationary and rotating windings.

(a) Removal of dirt by vacuuming and removal of grease and oil through wiping with lint-free rags.

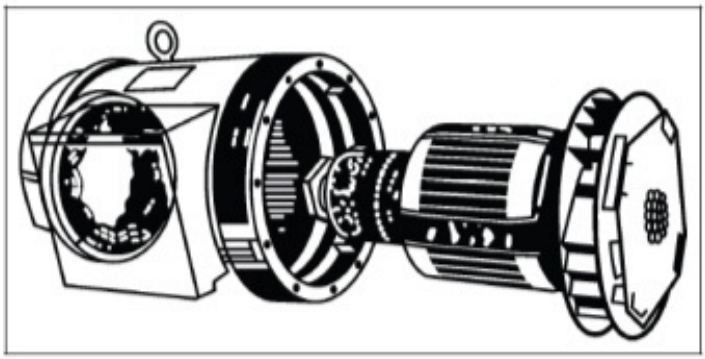
(b) If contamination is found, use the megger to check the insulation values; compare reading with the appropriate technical manual.

b. Permanent magnet generator.

(1) A PMG has been added to the generator assembly, to generate an EMF ing the PMG armature.

(2) The permanent magnet provides definite voltage output on start-up and greater voltage control under extreme load conditions.

(3) Check and make sure that no leads are touching together or grounded against the framework.



Alternating Current Brushless Generator
Figure 551-88L-2057_01

2. Demonstrate basic procedures to maintain a generator.
Note:

a. Fuel System.

(1) Consists of the fuel pump, supply lines, drain lines, fuel passages, injectors and filters.

(a) Remove the fuel filters by turning them counter clockwise with a filter wrench.

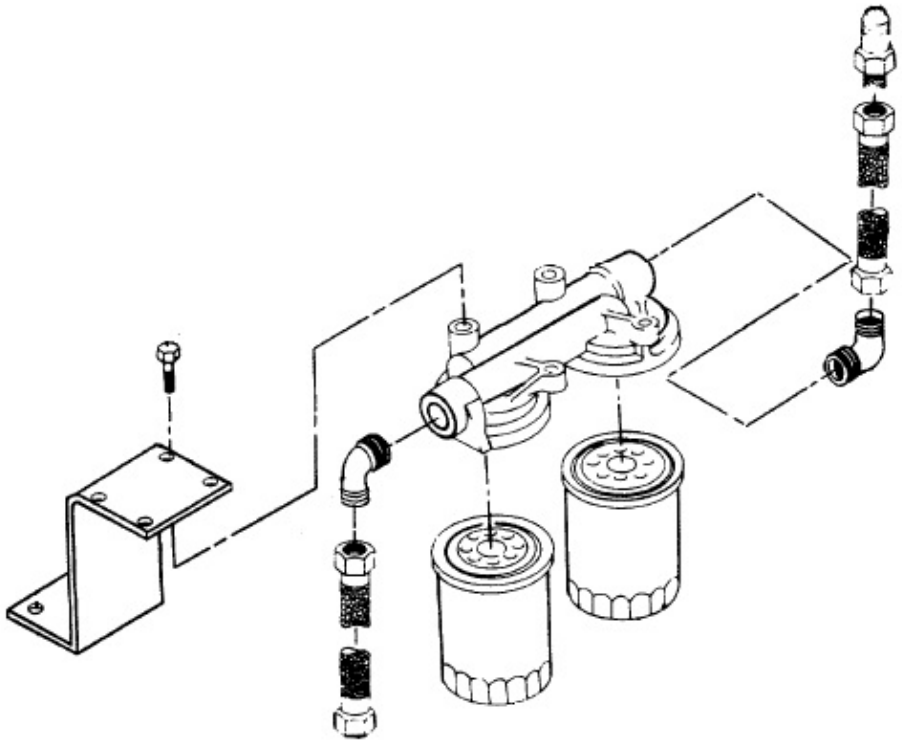
(b) Clean the filter head gasket surface with a lint free cloth.

(c) Apply a light film of clean engine oil to the gasket surface on the filter.

(d) Fill the new filters with clean fuel.

(e) Install the new filters on the filter head.

(2) Keep lines secured tightly to prevent leaks.



Fuel Filter Group
Figure 551-88L-2057_02

b. Lubricating System.

(1) Visually check the lubricating system for oil leaks.
Note: Allow time for the oil to settle in the pan after engine shutdown.

Check the engine oil level. The level should be at, or near, the "H" (high) mark on the dipstick.

Add oil as necessary.

(2) Run engine at idle until it reaches operating temperatures per manufactures recommendation.

(3) Change the full-flow and bypass filters per manufacturer's recommendation or local SOPs.

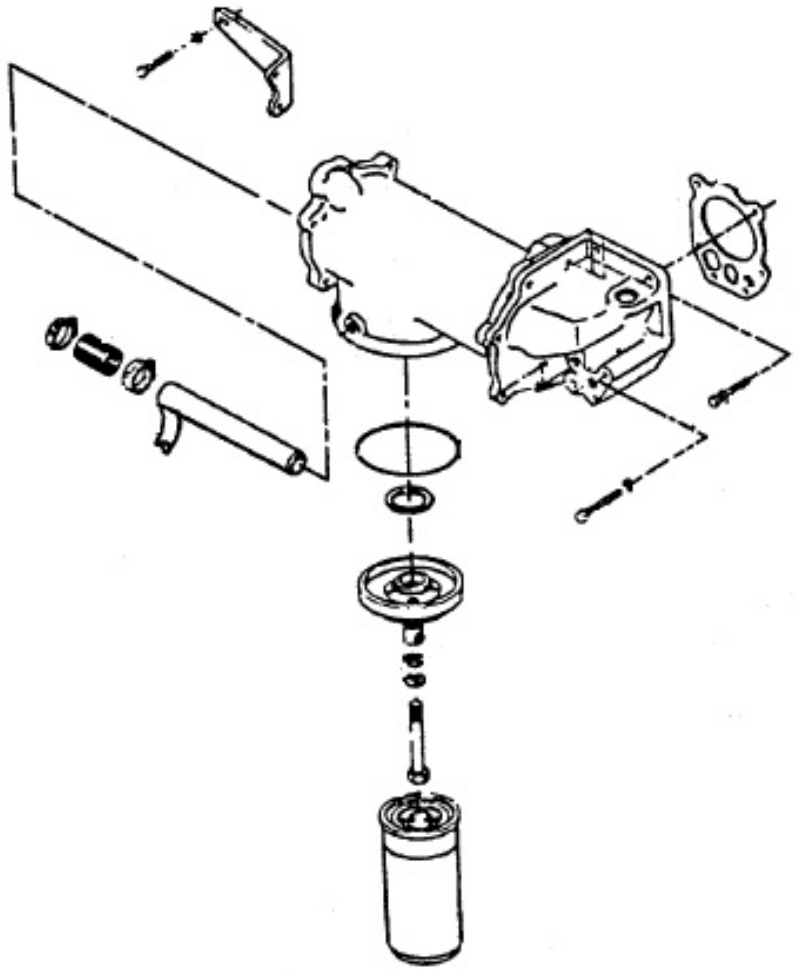
(a) Remove the full-flow and bypass filters.

(b) Clean the filter heads with a lint-free cloth.

(c) Apply a light film of clean engine oil to the gasket surface of the filters.

(d) Fill the filters with clean oil.

(e) Install the new filters onto their filter heads.



Lubricating Oil Filter Group
Figure 551-88L-2057_03

_1_ Hand tighten the filter until it contacts the filter head surface.

_2_ Hand tighten an additional one-half to three-quarter turn.

(f) Operate the engine and check for leaks.

c. Cooling System.

Note: Check the coolant level only when the engine is stopped. Wait until the temperature is below 120º (50ºC) before removing the pressure cap, or personal injury could result from hot coolant spray.

Check the coolant level. It should be at the 3/4 mark on the expansion tank sight glass.

Add coolant as necessary. Refer to TB 55-1900-207-24 for antifreeze and other additive requirements on make-up coolant

(1) Check for rust and scale formation in the system. If rust or scale is found, the system must be cleaned and flushed.

(2) Remove expansion tank cap and check engine coolant supply.

Note: Check for evidence of coolant leakage around tubings, hose connections, etc., and correct as necessary.

(3) Check for evidence of coolant leakage around tubings, hose connections, etc., and correct as necessary.

(4) Inspect water pump for leakage.

d. Air System.

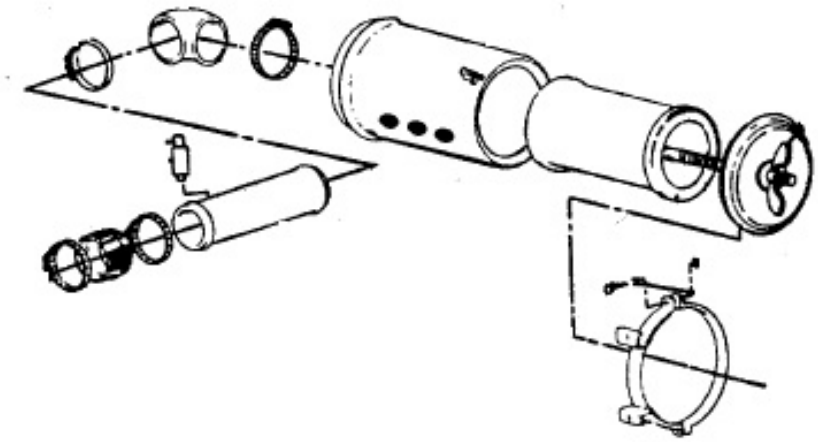
(1) Check air connections for loose clamps or connections, cracks, punctures, or tears in hoses or tubings, collapsing hoses, or other damage.

(2) Tighten clamps or replace parts as necessary to ensure an airtight air intake system.

(3) Check filter warning indicator for intake air restriction.

(a) The intake filter warning indicator will change from green to red, indicating an intake air restriction.

(b) Replace air cleaner element if required.



Air Cleaner Group
Figure 551-88L-2057_04

e. Electrical System.

WARNING

Turn off and tag all electrical power to the instrument panel and automatic starting circuits. Failure to do may result in personal injury.
Open the instrument panel assembly by removing the two screws one each in top corners of the panel. Swing the panel front down to expose the terminal board and the back of the instruments and wiring connections.

(1) Visually inspect the front of the instrument panel for broken gauges, lenses or damage to the panel face or cabinet.

(2) Visually check all wiring and connections for loose or broken connections. Secure or repair wiring as necessary.

(3) Clean the exterior of the generator housing and terminal box; Use a rag or soft nonmetallic brush or vacuum cleaner.

(4) Clean dust from electrical terminals and casing on voltage regulator.

(5) Use a soft bristle nonmetallic brush or vacuum cleaner.

(6) Check and make sure that no leads are touching together or grounded against the framework after cleaning.

(Asterisks indicates a leader performance step.)

Evaluation Guidance: None

Evaluation Preparation: None

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Demonstrated basic knowledge of generator maintenance.			
a. Alternating current brushless generators.			
b. Permanent magnet generator.			
2. Demonstrated basic procedures to maintain a generator.			
a. Fuel System.			
b. Lubricating System.			
c. Cooling System.			
d. Air System.			
e. Electrical System.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	TC 55-509-1	Marine Electricity	No	No
	TM 55-1905-223-24-3	UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTION SHIPS SERVICE GENERATOR FOR LANDING CRAFT UTILITY (LCU) (NSN 1905-01-154-1191) (REPRINTED W/BASIC INCL C1-5) (TH	No	No

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT.

Safety: In a training environment, leaders must perform a risk assessment in accordance with ATP 5-19, Risk Management. Leaders will complete the current Deliberate Risk Assessment Worksheet in accordance with the TRADOC Safety Officer during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination.

Prerequisite Individual Tasks : None

Supporting Individual Tasks : None

Supported Individual Tasks :

Task Number	Title	Proponent	Status
551-88L-2039	Conduct The Engine Room Watch	551 - Transportation (Individual)	Approved
551-88L-1042	Demonstrate Basic Knowledge of Power Generation System	551 - Transportation (Individual)	Approved

Supported Collective Tasks : None

ICTL Data :

ICTL Title	Personnel Type	MOS Data
88L30 Watercraft Engineer	Enlisted	MOS: 88L, Skill Level: SL3, Duty Pos: TFR, LIC: EN
88L20 Watercraft Engineer	Enlisted	MOS: 88L, Skill Level: SL2, Duty Pos: TFS, LIC: EN
88L40 Watercraft Engineer	Enlisted	MOS: 88L, Skill Level: SL4, Duty Pos: TGB, LIC: EN, SQI: O